1. -2. Canceled

3. (Currently Amended) An isolated polynucleotide molecule comprising a mutant allele of thiopurine S-methyltransferase (TPMT) gene or fragments thereof containing single nucleotide polymorphisms, SNPs 10 and~~/or~~ 17, ~~and/~~or SNPS 26 and 29 in the following haplotypes (combinations):

a) SNP 26 being MT(GG) and SNP 29 being WT(GG)

b) SNP 26 being HT(AG) and SNP 29 being WT(GG)

c) SNP 26 being MT(GG) and SNP 29 being HT(AG)

d) SNP 10 being MT(TT) and SNP 17 being MT(GG)

e) SNP 10 being HT(AT) or MT(TT) and SNP 17 being WT(TT)

f) SNP 10 being MT(TT) and SNP 17 being HT(GT)

g) SNP 10 being HT(AT) or WT(AA) and SNP 17 being HT(GT)

h) SNP 10 being WT(AA) and SNP 17 being MT(GG).

4. Canceled

5. (Currently Amended) An isolated polynucleotide molecule fully complementary to ~~any one of~~ the polynucleotide molecule ~~molecules~~ of claim 4 ~~claims 1-4~~.

6. (Currently Amended) A method ~~diagnostic assay or kit~~ for determining thiopurine S-methyl-transferase (TPMT) genotype of a subject which comprises

a) isolating nucleic acid from said subject;

b) amplifying specifically a thiopurine S-methyltransferase (TPMT) PCR fragment with primers of Table 2 from said

nucleic acid, which includes at least one of SNPs of ~~claims 1-4~~ claim 4 thereby obtaining an amplified fragment; and

c) genotyping the amplified fragment obtained in step b), thereby determining the thiopurine S-methyltransferase (TPMT) genotype or haplotype of said subject,

d) ~~the kit comprising sequence determination primers and sequence determination reagents,~~ wherein said primers are selected from the group comprising primers that hybridize to the polymorphic position~~s~~ in the human TPMT genes according to claim 4 ~~claims 1 - 4~~; and primers that hybridize immediately adjacent to the polymorphic positions in the human TPMT genes according to claim 4 ~~claims 1 - 4~~.

7. - 8. (Canceled)